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A CRITICAL SCAN OF FOUR KEY TOPICS FOR THE PHILANTHROPIC SECTOR

A study by the Rockefeller Foundation and Accenture Development Partnerships

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CONTENTS

INTRODUCTION

We are living in a dynamically changing, volatile and complex environment—one very different from even a single decade ago. Globalization, brisk population growth and advances in technology are among the key elements contributing to observable shifts: we have more urban than rural dwellers, more young and more old people, more technologically driven and interconnected systems, and the impacts of economic, political, social and environmental change are less contained—they reverberate across multiple sectors, cultures and geographies, affecting individuals, communities and systems in ways that traditional support systems were never built to withstand.

The influence of these broad trends is deep and far-reaching. There is an observable shift in how and where people live, how they interact with one another and with their environments; and in the speed and intensity with which systems—political, economic, social and environmental—impact each another. This changing reality brings great opportunity but also, for some, greater exclusion and vulnerability. Traditional support systems, if they are to effectively protect and empower people, strengthen systems, and positively influence the tide of change, need to evolve.

Based on these dynamics, the following questions must be posed:

- What are the needs and opportunities of this era and the one just ahead?
- How can we help improve the well-being of humanity *now?*

To help find answers to these questions, the Rockefeller Foundation joined forces with Accenture Development Partnerships to conduct a critical scan of four key topics for the philanthropic sector.

The Rockefeller Foundation, founded almost a century ago to improve the well-being of humanity, has continually adapted its efforts, tailoring them to suit changing times and respond to historic opportunities to achieve enduring success. Its goals are to expand opportunity through equitable growth and strengthen resilience to acute crises and chronic stresses, whether manmade or ecological. Its vision is a world in which globalization's benefits are more widely shared and the inevitable challenges that accompany it are more easily weathered.

Accenture Development Partnerships is a division of Accenture that channels Accenture's core capabilities—its best people and strategic business, technology and project management experience—to clients in the international development sector on a not-for-profit basis. Accenture Development Partnerships' goal: to collaborate with organizations working in the international development sector to help deliver innovative solutions that truly change the way people work and live.

The study aims to identify problem areas in the developing and developed world, as well as areas of dynamism and convergence that will, over the next five to 10 years, present opportunities to make a greater impact in the development sector. The study, which made use of a consultative process, investigates four key topics central to human wellbeing. These are: natural ecosystems, health, livelihoods, and urban environments.

These topic areas are reliant upon one another. Natural systems provide the resources that all life depends upon. Health and nutrition systems are essential for life itself. Economic systems use natural resources and the ingenuity and labor of healthy human beings to create a basis for material wellbeing.

But the status quo is no longer an option in any of these four areas. The dramatic changes that 21st century trends and advances bring are outrunning the ability of traditional systems to respond. Consider, for example, the impact of access to health services as human health challenges, driven by changes in population behavior, are transitioning from acute diseases to longer term chronic illnesses. And, with cities now home to more than half of humanity, consider the impact of urban systems on natural, health, and economic systems.

Each topic area must confront new stresses. At the same time, change presents new opportunities. By understanding and using the new forces and dynamics at play in our environments, new solutions can be created and opportunities realized. In fact, the seeds of new approaches are already becoming visible. To realize these benefits, conventional approaches must be challenged, whether in mindsets, institutions, rules, structures, or methods.

In each of the four identified topic areas there is a greater need to foster innovation and shift paradigms in order to expand opportunity for the vulnerable and those living in poverty, and strengthen their resilience.

By understanding and using the new forces and dynamics at play in our environments, new solutions can be created and new opportunities realized.

Topic areas

Within each of the four topic areas, the Rockefeller Foundation and Accenture Development Partnerships identified the most pressing problem spaces, their impacts on the poor, as well as some actions taken by various stakeholders to address problem spaces.

- **Health:** This topic tries to understand the dynamics of creating positive health outcomes, from monitoring proper preventative health to helping improve access to water and food, and building health system access for the broader population.
- **Cities:** This recognizes that cities can be dynamic but those at the base of pyramid can be left behind, and investigates how to provide greater opportunities for economic development.
- **Ecosystems:** This topic looks to develop an understanding of ecosystems and their impact on people's well-being.
- **Livelihoods:** This topic attempts to identify opportunities and ways to create inclusive environments in the global market to drive private sector demand and develop new jobs.

Each of these topic areas touches on problems that the Rockefeller Foundation recognizes as most important to poor populations both now and in the near future, even as it continues to analyze, research and understand the dynamic interactions and evolving issues that impact these topic areas. As each topic area is large and complex the problems highlighted in this report should not be considered comprehensive—there could be potentially many more impactful problems than are underscored here.

Methodology

This report provides an analysis of changing trends and the key factors influencing change in each topic area. Pressing problems and potential dynamism across topic areas were then distilled. For this analysis, there were three inputs:

1) Interviews were conducted and consultations held with approximately 25 subject-matter experts across each topic area.
2) Information from the Rockefeller Foundation's global Searchlight network of trend monitoring and horizon scanning specialists was analyzed.
3) Robust secondary research helped set the broader context for each area and create an evidence base for each problem level.

Review workshops provided perspective on the cross-cutting themes and validated trends, with further cycles of review to refine and test content. These final reviews saw engagement of additional specialists and the convening of senior Accenture Development Partnerships professionals. As a result of each session, a set of dynamic problem spaces, areas of dynamism, and topic area trends were identified.

These identified elements do not exist in a vacuum in each topic area—many of them are connected to the challenges and opportunities that fall into other areas. The context of these problems is also shaped, negatively or positively, by macro-level trends and local conditions.

Accenture Development Partnerships:

Established in 2003 through an employee-led initiative, Accenture Development Partnerships' goal is to collaborate with organizations working in the international development sector to help deliver innovative solutions that truly change the way people work and live. Positioned increasingly at the intersection of business, government and civil society sectors, it is meeting its goals. It also spearheads Accenture's emerging market strategy for private sector clients.

HEALTH

Overcoming emerging challenges and enduring barriers to better nutrition and healthier lives

While medical science continues to advance on all fronts, effectively treating a host of diseases and bringing hope, better quality of life and increased longevity, the human health landscape is shifting. Driven by global trends, where and how people live, their environment, the foods they consume, and consequently the nature of the diseases they suffer from is changing. What is emerging is a new set of challenges that cannot be addressed by scaling up traditional disease-focused prevention and treatment responses.

More people crowded into urban spaces with sometimes limited or weak supporting infrastructure are exposed to a range of new health challenges. Among them, pollution of the air, water and soil; exposure to infectious diseases; and reliance on poor quality foods that promote obesity and its attendant diseases. For the poor, the new and growing challenge will be dealing with chronic non-communicable diseases (NCDs). And they must find a way to do so in a world where advances in health care policy toward provision of universal health coverage (UHC) are creating a different set of barriers.

For health care in the 21st century the key will be to find new approaches that assist the poor to maintain health, not just treat disease. These approaches must address the complex interrelated issues of agriculture, nutrition and health. One of the key building blocks needed to build resilient communities and health systems will be finding approaches to promote and incentivize individuals, communities, governments and the private sector to make better choices that deliver sustained improvement in nutrition—a vital platform for lifelong health and wellbeing.

Health promotion—increasing awareness and incentivizing better health behaviors and choices—will be made easier by the use of new technologies. But to develop more effective interventions and scale them successfully, an understanding of social determinants and contexts relevant to health is necessary.

Broader context

A rapidly growing but also aging population, continuing urbanization, and the rise of the middle classes are changing disease patterns and impacting health outcomes. Up until a few decades ago, infectious diseases accounted for the majority of the global disease burden. By 2020, NCDs will account for 80 percent of the global burden of disease, with more than 80 percent of deaths occurring in low to middle-income countries.[1]

Tackling the NCD epidemic will require a new and more holistic approach that attends to the underlying causes of ill health instead of controlling diseases one by one. Chief among the underlying causes to be addressed is nutrition. The globalization of food supply chains and social drivers has seen vegetables and cereals replaced by highly processed foods that are low in nutritional value. This has been a big contributing factor to the rapid rise of NCDs.

In terms of policy changes, the introduction of UHC in the developed and developing world can drastically improve health outcomes for large numbers. However, challenges like delivery inefficiencies and ongoing risk of exclusion of poor populations must be addressed, along with the chronic shortage of health workers, to fully realize promised benefits. Healthcare costs are also expected to rise globally despite measures—like the Affordable Care Act (ACA) in the US—to lower and control these costs. This will compel governments, insurers and employers to look for innovative business models and solutions to manage their medical costs. In particular, a strategy of holistic health is being seen as a means to help restrain long-term costs effectively.

Use of technology will be a crucial in this swiftly transforming environment to deliver care that is more efficient, cost-effective and, most importantly, of high quality.

Problem spaces

Key problem spaces in this topic area are:

- **Unfinished agenda of universal health coverage.** *Ensuring the poor are not left behind.*
- **Changing disease burden of the poor.** *As the poor live longer lives, they face an evolving disease burden due to NCDs and obesity.*
- **Destructive impact of undernutrition and food insecurity.** *Unbalanced diets and unmet nutritional needs lead to increased vulnerability of the poor.*
- **Public health problems at work and at home.** *The poor face unregulated, unhealthy, and unsafe conditions in urban environments.*

UNFINISHED AGENDA OF UNIVERSAL HEALTH COVERAGE

Ensuring the poor are not left behind

Increased adoption of Universal Health Coverage (UHC) has opened up opportunities for major improvements in medical and public health services and in health outcomes. However, as attention shifts to UHC design and implementation, deliberate measures must be taken to ensure that the needs of the poor and vulnerable are taken into account.

More than a billion people cannot access the health services they need because they are either unavailable or they cannot afford to use them. To address this, the 25 wealthiest nations now have some form of UHC and others, including lower income countries, are working toward the adoption of UHC. In implementing and operationalizing UHC, however, the delivery of care, number of healthcare workers, financing and infrastructure often vary greatly. This results in strained health care structures, lack of affordability, and inequitable levels of services, with poor and rural populations most often worst affected. While governments are trying to overcome these challenges in the developed world, especially the United States, current health systems are starting from a context of relatively poor health outcomes and inconsistent access.

UHC as a concept is widely accepted by most stakeholders as leading to better access to necessary care and improved population health, particularly for poor people. However, its implementation is still in its infancy in the developing world, and in both the near- and long term many barriers remain in the delivery of more efficient and effective care. In the developed world, especially in the United States, the glut of patients will exacerbate the physician shortage, increasing the shortfall by at least 50 percent, and particularly affecting medically underserved populations where finding a doctor is already difficult.

And there are other limitations: even as the poor get increased access to insurance, there is a risk that their insurance will not include essential benefits and financial protection from high out-of-pocket health care costs which may lead to medical debt or hinder access to medical services.

While insufficient resources devoted to fully implementing and supporting UHC is an important driver of this challenge, wastage is another big issue. Globally, 20 to 40 percent of resources spent on health are wasted, typically due to inefficiencies like duplication of services, lack of information sharing, and inappropriate or overuse of medicines and technologies.[2]

What's being done?

There is growing recognition that more needs to be done about equity. Support for shifting toward pre-payment is growing and increasing momentum for universal health coverage has forced insurance and other health care financing structures to rethink the current out-of-pocket model. Countries are also finding innovative ways to raise revenues for health that could support additional services for the poor by, for example, introducing levies or taxes earmarked for health. In addition, increased capabilities to administer UHC programs, supported by technology advances such as the use of smartcards, are making UHC more feasible.

If we continue to see strong economic growth in many developing countries in the next years, the drive towards broader adoption of UHC will likely continue on its dynamic path. To ensure sustainable implementation and equitable design, further steering will be required. It is expected that this will see fundamental systems infrastructure put in place in more lower-middle and middle income countries in the next five to 10 years.

Healthcare in the United States is at a tipping point. With the passage of the Affordable Care Act, the topic of care for those who can least afford it has come to the fore. But it is not only the government that is trying to address the problem. Recognizing that the long term cost of care is unsustainable, providers and the private sector are focusing on how to address the needs of the large number of uninsured. Among others, there is an increased focus on prevention and wellness programs, and introduction of innovations in remote treatment and monitoring services.

Potential opportunity for a development stakeholder:

Identify next-generation medical technologies. With the knowledge that the poor often do not have access to their medical records, identify next-generation UHC technologies that leverage distributed information systems, such as the cloud or smartcards, that can provide access to patient information to any provider in the system.

CHANGING THE DISEASE BURDEN OF THE POOR

As the poor live longer lives, they face an evolving disease burden due to NCDs and obesity

People are living longer. But rising life expectancy and longer working lifespan come with a heavier and evolving disease burden. Non-communicable diseases (NCDs) present an immediate and growing health challenge in middle- and lower-income countries. Additionally, an escalating global epidemic of obesity, "globesity", has taken hold in many parts of the world, posing major risks for serious diet-related non-communicable diseases and straining health systems.

Healthcare in the developing world has traditionally focused on infectious disease and meeting the Millennium Development Goals. It is not equipped to deal with the coming non-communicable disease crisis, which will affect low-income populations in the developing world most—more than 80 percent of deaths under the age of 60 from NCDs will occur in the developing world, according to the World Health Organization.[3] Additionally, once considered a high-income country problem, obesity is now rapidly on the rise in low- and middle-income countries, particularly in urban settings. Since 1980, obesity rates have doubled or tripled in many developing countries across the globe and are rapidly growing in poor populations who can least afford it. The implications are ill-health, higher medical costs and loss of productivity, shifting the poor further into poverty.

The growing incidence of NCDs is driven by a lack of education, inability to access nutritious foods, the challenges of urbanization (changes in diet, a sedentary lifestyle, and exposure to air pollution), and greater longevity. Exposure to multiple risk factors for NCDs, combined with the lack of health care capacity, preventative healthcare and social protections in lower-income countries, make the consequences and costs associated with NCDs weigh most heavily on those already most vulnerable.

One of the greatest drivers of obesity is the transition to urban living—as people move out of poverty or move to urban areas, access to highly processed, nutrient deficient convenience foods increases. To empower people to choose to eat healthy food and be physically active, the healthy choice must be physically, financially and socially the easier and more desirable. This is not always the case. This is the result of both market failure and failure by governments to protect the health of all citizens.

In African nations, NCDs are rising rapidly and are projected to exceed communicable, maternal, perinatal, and nutritional diseases as the most common cause of death by 2030. The greatest increases will be in Africa, South East Asia and the Eastern Mediterranean, where they will increase by over 20 percent.[4] NCDs also kill at a younger age in developing countries, where 29 percent of NCD deaths occur among people under the age of 60, compared to 13 percent in high-income countries.

What's being done?

The adoption of universal health coverage provides a potent vehicle to prevent the poor from being left behind in efforts to address NCDs and obesity. For example, drugs are being developed for low to medium income countries, with the specific goal of impacting NCDs. A four-in-one polypill developed in India, for example, cuts blood pressure and cholesterol significantly in over-50s for secondary prevention of stroke and heart attack. Additionally, global leaders recognize that NCDs need to be addressed by the health community and by development stakeholders, with increased focus on wellness and prevention.

Another emerging trend addressing this health challenge is the growth in incentives from health insurers and employers for healthy behavior. There is increased regulation and more standards being applied to food and marketing to children. There is also greater commitment from the private sector, including major multinationals, to self-regulate. In the United States, health care companies and employers are focusing on the chronic factors of reduced health, such as NCDs and obesity, aiming to lower long-term costs per patient through education programs and monetary incentives for healthier behaviors. Governments in both the developing world and in the United States are imposing stricter food standards to address community health issues.

Potential opportunity for a development stakeholder:

Provide policy guidance for NCDs. Work with multilaterals and NGOs to provide guidance on how health systems and governments can change their policies and health system alignment to move from an infectious disease alignment to an NCD and wellness focus.

DESTRUCTIVE IMPACT OF UNDERNUTRITION AND FOOD INSECURITY

Unbalanced diets and unmet nutritional needs lead to increased vulnerability of the poor

Unbalanced diets such as those that rely heavily on single-starch staples can lead to serious micronutrient deficiencies and undernutrition, severely impacting poor and vulnerable populations. For infants and children under the age of two, undernutrition remains a leading cause of death and severe, often irreversible, impairment. Undernutrition needs to be addressed from pregnancy through the first 24 months of life in order to avoid irreparable harm to millions of vulnerable children.

More than two billion people, primarily in low- and middle income countries, are estimated to be deficient in key micronutrients (vitamins and minerals). This puts them at greater risk of illness and impaired mental and physical development, and contributes to both aging and obesity. The groups most vulnerable to undernutrition are pregnant and lactating women, and young children, mainly because they have a relatively greater need for vitamins and minerals, and are more susceptible to the harmful consequences of deficiencies.[5]

Childhood undernutrition is life-threatening. It is a factor in approximately 40 percent of the total 11 million deaths of children under five in developing countries. Critical growth occurs from pregnancy to the first 24 months of life, and deficits in nutrition acquired by this age are difficult to reverse. Failure to receive proper nutrients during childhood harms both the body and the mind. Consequences include risk of early death, increased risk of infectious diseases, reduced abilities, and continued health impairment such as blindness or anemia.[6] While progress is being made to reduce child undernutrition, it is still a significant problem.

Affordability and lack of access to nutritious foods are important factors contributing to this problem. While various regions in the developing world host a great diversity of fruit and vegetables, low availability of these products in domestic markets and for local consumption reduce resilience towards diseases, limiting economic opportunities for those affected. Poverty, natural disaster, conflict, the many impacts of HIV AIDS on individuals and families, failure to bring nutrition interventions to scale at a global level, and increasing food prices all exacerbate the impacts of undernutrition, and children bear the biggest burden.

Lack of access to food is also an important contributor to food insecurity. The world currently produces enough healthy food, but many people still do not have access to that food.[7] Food insecurity thus remains a problem, leading to hunger, health concerns, famine, death and disability, and social uprising. Of the approximately one billion people subject to food insecurity, more than 60 percent are in Asia, and 25 percent in Sub-Saharan Africa.[8]

Key contributing factors include a lack of investment in sustainable agriculture practices, food spoilage, misalignment of agriculture systems and policies with local food and nutrition policies at national or regional levels, increasing scarcity and deterioration of natural resources, declining yields, and growth of crops for biofuels.

What's being done?

The long under-recognized problems of undernutrition and food insecurity have received much attention in recent years. A 2008 Lancet series catalyzed interest in "nutrition as a key component of development" within the international development community. This, among others, spurred initiation of a number of nutrition programs, such as fortification and biofortification, by the international development community in conjunction with local stakeholders. Food fortication, the addition of micronutrients to processed foods, has been successful and attempts have been made to bring these initiatives to scale. Biofortification, the idea of breeding crops to help increase their nutritional value, while still in its infancy, shows promise.

The international development community has tried to address childhood undernutrition many times in the past, with varying degrees of success. New technologies, models of delivery, and greater private sector engagement in this arena offer potential opportunities for stakeholders to make decisive and sustainable long-term impacts in resolving the problem.

There is also a new wave of innovation addressing key issues such as lack of market access to healthy foods, low productivity, and a lack of infrastructure. Recognizing that solving the food spoilage issue is a solution to undernutrition and food insecurity, innovations have been developed to shorten the supply chain. There are also innovations in food production focused on developing crops that are more resistant to extreme weather effects, as well as an ongoing focus on identifying technologies that will reduce the amount of water required for agriculture. The private sector is engaging in the development and implementation of supplementation programs; new models for delivery of assistance, like the conditional cash transfer programs in Mexico and Colombia to reduce poverty, are helping to alleviate undernutrition and food insecurity challenges; and the growing penetration of mobile technology is increasing access to market prices, weather information, and treatment advice for plant and animal diseases, helping farmers make better decisions.

PUBLIC HEALTH PROBLEMS AT WORK AND AT HOME

The poor face unregulated, unhealthy, and unsafe conditions in urban environments

While age-old public health hazards such as unsafe food and water and overall poor sanitation are still prevalent in urban areas, new health risks have emerged. High population density and the concentration of industry in cities leads to significant increases in problems, such as air pollution from households, industry, and transportation. At work, the poor are disproportionately affected by working in unregulated, unhealthy and unsafe conditions.

Most of the world's population growth is expected in urban areas in low- and middle-income countries, primarily in small and mid-sized cities. The speed of this growth may outpace the ability of governments to understand need and respond—i.e., develop appropriate health services and infrastructure, particularly for poorer segments of the population. In fact, the health challenges facing cities may be beyond the control of health departments alone.

While cities are associated with numerous positive benefits, urban growth has outstripped the management capacity of many municipal governments, exposing populations to serious environmental hazards. For the urban dweller, health risks diminish ability to fully capture the economic and other opportunities associated with city living.

Poverty, lack of education and scarce employment opportunities also force the poor to work in unhealthy and dangerous conditions across formal and informal sectors. More than 2.3 million deaths per year are due to occupation hazards such as heat stress, occupational accidents, pesticide poisonings, organic dusts, and biological exposure.[9]

With little or no representation and weak or no social protection in case of injury or illness, informal and temporary workers find themselves in a vicious cycle where their workplace increases their physical vulnerability while at the same time they lack the economic resilience to cope with the adverse effects. Precarious employment and working conditions, along with job insecurity are associated with poor health outcomes, including adverse effects on mental and physical health.

In low- and middle-income countries, workers' safety and occupational health remain neglected because of competing social, economic, and political challenges. Informal economies employ a large component of the workforce in these countries. Deaths and injuries in the informal sector—where a large part of the workforce is engaged in hazardous activities—take a particularly heavy toll. Throughout the developing world, the poorest (often women and children) are least protected and are among the most affected by these environments.

What's being done?

Dynamic forces acting to address issues in this focus area include the advancement of universal health coverage, which increases the opportunity for the urban poor to gain access to health care; and increased access to information and technology, which allows cities to improve planning and governance policies, especially in slums or informal settlements. There is also advancement in urban public health and employment policies, and efforts to improve the natural and built environment through initiatives to improve water and sanitation, provide free public health centers, and affordable and safe housing.

Insufficient labor regulations (formal and informal), weakened labor representation, and lack of data on the informal sector have slowed decision-making and adoption of interventions focused on work-related health. Public advocacy by consumers and greater private sector responsibility for labor conditions can improve the working conditions for the vulnerable, enforcing increased transparency by major manufacturers. Unionization of the informal sector is also starting to emerge, giving these workers a voice. There has also been improvement in the private sector in terms of focus on improving the working conditions of the poor, including the introduction of voluntary codes of conduct and development of inclusive global supply chains.

In the future, cities will be the focal point of cumulative health risks, even more so than today. However, it is difficult to assess whether there is strong momentum towards addressing this challenge. Overall, this appears to be a problem space that requires further attention and funding to raise awareness, build capacity and ensure equitable implementation of interventions.

CITIES

Catalyzing equity and resilience in the world's most dynamic places

There are increasingly dense concentrations of people in urban areas that are rapidly expanding as more and more people flock to these "oases of greater opportunity". Ill equipped to facilitate this tide of humanity, the growth of these cities will adversely impact health, and environmental and economic well-being. Individual and group resilience is likely to be further impacted by the speed of urbanization as this weakens social ties, a key ingredient of resilience.

Rather than allow cities to develop into slums and pockets of exclusion, there is the potential—with suitable support mechanisms and approaches—to turn these cities into engines of opportunity and social mobility where there is more equitable growth. Traditional urban planning can be transformed by inclusive and responsive approaches that balance the interests, and address the long term wellbeing of a diverse and growing urban community.

Broader context

There are a number of trends shaping and giving context to this topic area.

By 2030, a global urban majority will live in Asia and Africa—the urban populations of Asia and Africa will more than double in the three decades to 2030, growing to 2.64 billion and 742 million, respectively.[10] The cities in these developing countries will be home to seven out of every 10 urban inhabitants in the world.

Many of these cities will be urban slums where residents face unhealthy and overcrowded conditions that negatively impact productivity, economic efficiencies, and market expansion.

These cities will also, by 2030, have tripled the land they occupy. Sprawling urban expansion is often characterized by informal and illegal patterns of land use, combined with a lack of infrastructure, public facilities, and basic services, inadequate access roads and often little or no public transport.

With little protective infrastructure, the large poor and vulnerable urban populations in low- and middle-income countries are exposed to possibly the greatest risk from natural disasters, which are themselves increasing in frequency. Additionally, growing population density in slums has increased the threat of manmade hazards such as fire and outdoor pollution.

In an attempt to keep pace with urbanization, global investment in infrastructure projects over the next 20 years will total $24 trillion.[11] Demand will be concentrated in China, India, Brazil, Turkey, and Indonesia, with African cities likely to fall behind. In developed countries like the United States, municipal budgets will be increasingly strained due to number of factors, such as shrinking tax bases, reduced public funding, increased demand for services, rising infrastructure and healthcare costs. This will disproportionately affect low income residents.

Urban corruption, which proliferates in developing countries, also hurts the poor most. Poor accountability and transparency within urban administrative systems exacerbates urban inequality, limiting access to urban goods and services, and undermining the quality of life of the poor as well as their ability to earn a livelihood. Growing inequality, high unemployment, and low job growth contributes globally to social unrest, particularly among young people in cities.

The role of technology in transforming cities is an important one. Technology is quickly changing the way civic leaders are providing services to their populations. The proliferation of technology in both the developed and developing world has changed the vision of good governance in the minds of citizens and made cities more efficient and accountable to their citizens. New technology is also changing the way that cities approach energy infrastructure investments. Cities are moving away from centralized models and considering more distributed, micro-generation solutions to energy technology—utilizing renewable energy sources and providing citizens with reliable and safe access to energy.

Problem spaces

Key problem spaces in this topic area are:

- **Informal settlements, contested land and housing shortages.** *Current urban environments often hinder the poor, leaving them insecure.*
- **Missing infrastructure for the poor.** *The urban poor often live and work in inequitable conditions.*
- **Livelihood vulnerability of urban residents.** *Poor and vulnerable populations, such as migrants and youth, face a range of challenges in urban environments.*
- **Vulnerability of the urban poor to disasters.** *Urban disasters disproportionately impact the poor.*
- **Regionalization of poverty.** *The poor are stuck in mid-sized cities in suburban areas.*

INFORMAL SETTLEMENTS, CONTESTED LAND AND HOUSING SHORTAGES

Current urban environments often hinder the poor and leave them insecure

Many city governments in the developing world lack the capabilities and political will to pursue truly inclusive growth and infrastructure strategies, even as the population of urban poor continues to grow. Within these cities, the urban poor often do not have affordable housing options, forcing them to live in informal settlements with insecure tenure, land rights, and energy access.

Approaches to urban planning and development defined by developed countries do not effectively address the growing problems of poverty and inequality in developing countries, often failing to incorporate and support large poor populations living and working in informal urban environments. Informal settlements are also often not recognized as a permanent component of the urban environment, leading to inadequate development of housing and energy infrastructure, and increased social exclusion.

Many cities develop schemes that seek to upgrade or eliminate informal settlements without considering the needs, lifestyles, or potential impacts to the livelihoods of the local population. Currently, it is estimated that 924 million people live without secure land tenure in the urban areas of developing countries.[12] With rapid urbanization, this figure is expected to grow. UN-HABITAT estimates that 1.5 billion people by 2020 and two billion people by 2030 will live without formal land tenure in urban areas.[13]

While the poor living in informal settlements contribute to the economic life and vitality of cities, with no formal tenure, land rights, or a political voice, they face a number of key challenges, including lack of access to basic services such as education, energy, water and sanitation. They are also vulnerable to aggressive actions by the state, such as forced removals, in the face of urban development. Additionally, unable to utilize property as leverage, many poor communities also lack broader access to credit and other financial resources, and safe energy sources, with repercussions on income and livelihood.

City governments and the private sector will continue with near-term efforts to make urban environments in the developing world more sustainable and economically productive, but under the planning paradigm of a Western mid-20th century vision of a city, which may not reflect the reality of their urban environment. The informal economy will continue to grow in the long term and is a permanent, not short-term, phenomenon of the urban environment. Drivers of the land tenure and housing shortages issues include the increasing migration to cities, infrastructure development that often impacts land where poor populations reside, rapid economic growth which motivates slum removal, and protection of the interests of large land owners.

What's being done?

City municipalities and urban planners are increasingly aware of the need for better tools to manage city growth sustainably, equitably and efficiently. In recent years the concept of a sustainable city that promotes the social, economic and physical health of all residents has been hotly debated with progress towards developing indicators and establishing political will. However, specialists mention a lack of a shared vision among more forward-thinking urban designers and non-governmental organizations who would adopt inclusive growth models, and the proponents of "old guard" ways of building cities to capitalize economic potential, often to the detriment of the poor and vulnerable, especially those in informal settlements.

International debate on sustainable urban development and pro-poor growth has spurred new approaches to planning, recognizing informal settlements and the value of tenure security to the poor, and energy security. The value of the informal sector is becoming more recognized by cities in the developing world. Many are starting to understand that the informal sector is a vibrant and important part of long term development. To protect the lives of those who are in the informal sector, many cities are looking to provide titling for informal settlements to make them formal. Finally, there is an increased understanding that investment in energy can create public goods that build the resilience of the poor through numerous positive externalities, including education, food safety, health, and hygiene.

MISSING INFRASTRUCTURE FOR THE POOR

The urban poor often live and work in inequitable conditions

The urban poor often live and work in the most overcrowded and most polluted areas in cities, increasing their exposure to health and safety risks. In many cities around the world, the urban poor face inequitable and inadequate access to clean water and sanitation services, which compromises their health. Those in informal settlements, in particular, spend a far greater portion of their income on access to clean water than wealthier residents who occupy formal housing.

Over 90 percent of urban growth is expected to occur in the developing world,[14] adding an estimated 70 million new residents to urban areas each year. With increased energy consumption, more industrial and domestic waste in these areas, the exposure of urban dwellers to environmental hazards and pollutants is increased, with greater risk to their health and safety. In developing countries, lack of access to clean water and sanitation will add to the problem. Together with adverse social and economic conditions, this will reduce the overall resilience of poor individuals and communities.

The global urban water and sanitation problem is concentrated in slums, peri-urban areas, and informal settlements. Approximately one in four city residents worldwide lives without access to sanitation facilities. Poor water quality and lack of sanitation services leads to water-related diseases such as diarrhea, typhoid, malaria, and cholera. In Sub-Saharan Africa and South Asia, less than half the population has access to adequate sanitation infrastructure.[15] As slum populations increase, the problem will be exacerbated. In many cities in developing countries, the cost of water creates a financial burden for the poor, with woman and children suffering the worse impacts. The cost of water is far greater for the urban poor than for the wealthy in low income countries. People living in informal settlements often pay five to 10 times more per liter of water than wealthy people living in the same city.

Despite more gains in cities when compared to rural contexts, rapid urbanization is driving a critical need to address issues of access to clean water and proper sanitation for the urban poor. However, lack of finance for infrastructure and resource scarcity is a considerable barrier to improvements in developing country cities. Public utilities are frequently unable to recover costs, leading to the inability to expand service into new areas. In addition, private providers of water are typically unregulated, and thus lack the oversight to ensure that clean, affordable water is available to everyone.

A number of issues contribute to toxic and unsanitary urban environments, including: the prioritization of growth at the expense of environmental sustainability; assigning responsibility for environmental issues at national rather than city levels; weak urban management systems; lack of representation of the poor in city governance structures; and lowered levels of biodiversity in urban spaces to provide a natural barrier to pollution and sanitation problems.

Recognizing that the impact of many hazards is not isolated to one segment of the population, the following implications are most significant for the poor and vulnerable. Often housing is overcrowded, unsanitary, and has inadequate ventilation, which also contributes to the transmission of health threats.

What's being done?

There are multiple actions being taken to address this problem. In both the developed and developing world, there is increased regulation on harmful emissions. India's air pollution regulations, for example, were more effective at reducing ambient concentrations of particulate matter, sulfur dioxide, and nitrogen dioxide. Additionally, increased pressure from the rising middle class is forcing municipal governments to address environmental threats. Middle class activism to legislate air pollution in Southern California is a good example. Many large cities want to appear more attractive and presentable on the global stage, often resulting in major improvements to the external urban environment. For example, Beijing made major strides against air pollution when it hosted the Summer Olympics in 2008.

What is promising is that debates around the "smart" or "intelligent" city are starting to integrate poverty alleviation as a key dimension to the solution that would ensure the smart city is also pro-poor. Growing acknowledgment that these goals need to be aligned is evident in a number of cities' investments in slum upgrading and measures to regulate pollutants in public urban spaces.

Acting to address water and sanitation issues is also a shift from consumption tariffs to tariff subsidization for water, subsidization of water connections, and increasing cooperation between public utilities and existing private sources of water supply. Additionally, there are new actors involved in changing the dynamics of this problem. The recent increase in the number of women appointed as water and environment ministers may provide an impetus to gender and water programs. In late 2005, there were 40 women ministers of water or environment, representing every region and level of development in the world.

Finally, there are innovations being piloted around the world. In Brazil, alternative, low-cost sewerage systems, with sewage treatment technology adapted to local conditions using inexpensive materials and construction techniques, are being developed for informal settlements.

LIVELIHOOD VULNERABILITY OF URBAN RESIDENTS

Poor and vulnerable populations, such as migrants and youth, face a range of challenges in urban environments

Though they seek security and prosperity in cities, urban migrants often struggle to establish stable livelihoods and access basic services. Livelihood options for urban youth are in short supply and often not aligned with their aspirations, skills, or experience. This lack of opportunity for both groups sets the stage for enduring wage scarring and diminishes the equitable growth of cities overall.

There are significant vulnerable populations in the urban environment, such as migrants and youth populations. The number of migrants around the world is increasing. Approximately one billion people in the world are migrants, with the broad majority of them living in urban areas. Migration can be a resilient response to contextual changes and remittances can strengthen the resilience of family members and communities left behind, providing a social protection strategy against economic risks. At the same time, newly arriving migrants often face difficult legal, economic, and social conditions without the support of a strong network, making them one of the most vulnerable segments of urban populations.

For youth, the urban context can be incredibly grim. Across the developing world, the youth bulge continues to manifest itself in the urban areas. Every year, 121 million adolescents will enter the labor market, 89 percent of which are located in developing countries. And global youth unemployment is on the rise. According to an International Labor Organization report, over 75 million youth worldwide are unemployed, with a projected unemployment rate of 12.7 percent for 2012.[16]

Both groups face employment challenges. Migrants have limited employment opportunities as many are undocumented and cannot take up formal employment. There are also greater health risks related to living and working in poor conditions, lack of access to basic services and the high cost of health and other services. For youth, within urban areas of the developing world, there is a significant gap between available jobs and the supply of labor, leaving a large number unemployed. A lack of education has created a skills gap which is also driving urban youth employment issues.

Increased youth unemployment results in lower future earning potential. Youth are trapped in a cycle of unemployment, underemployment, and general financial instability, resulting from a lack of experience, increasing the likelihood of wage scaring. The inability of urban youth to secure jobs greatly impedes their later economic resilience, since they lack the networks and social capital that could lead to future work.

Cities risk missing a window of opportunity—while migrants and youth are drivers of dynamic economies, in both the United States and the developing world large portions of disenfranchised populations could represent a lost opportunity to profit from a disproportionally large working-age population

What's being done?

Urban migration is a challenge and an opportunity that city municipalities cannot ignore. On the one hand, migrants can bring new economic potential and vitality to cities. On the other hand, migrants who fail to prosper in cities suffer much greater hardship due to general social exclusion and difficulty accessing public assistance.

The reactions of cities to the issue of migration are somewhat ambivalent, but instances of harsh proscriptions on illegal migration alongside emerging policy changes and new uses of technology to promote inclusion indicate that this is a dynamic space. Additionally, some countries in the developing world are creating special zones to promote investment by the private sector, leading to increased sustainable migration to key urban areas. Private sector companies and governments often develop the infrastructure to accommodate migrants into an area, providing housing, social services, etc.

For youth, the widespread recognition that youth unemployment is global and growing has spurred an international conversation on how best to find local solutions. A tipping point has been reached in terms of seeing the problem clearly, but many cities still need effective inclusive growth and recovery strategies and policies to promote employment and decent work for young people. Additionally, public-private sector collaborations have increased; concerns about national competitiveness and becoming stuck in the "middle income trap" prompt governments and the private sector to consider more seriously how to capitalize on a large young population.

VULNERABILITY OF THE URBAN POOR TO DISASTERS

Urban disasters disproportionately impact the poor

Extreme weather and other hazardous events in urban environments disproportionately impact the health, safety, and livelihoods of the poor.

Urban populations are more exposed to the risk of disasters. As both urbanization and the frequency of disasters increases, more people and especially the more vulnerable urban poor will be affected. In Africa and Asia where the greatest urban growth is expected over the next few decades, exposure to droughts, flooding and earthquakes is high. The urban poor are further compromised by inadequate access to infrastructure and services; unsafe housing; and overcrowded living conditions, which increase the risk of encountering disaster from fire and infrastructural damage.

In the 21st century, an upward trend in urbanization has correlated with a similar trend in the annual number of disasters. Although no direct causal link can be made between urbanization and disasters, over the same time period, the number of people affected by these disasters also increased. In the wake of disaster, lack of access to services; loss of shelter, goods and livelihoods; as well as exposure to the health hazards that often rapidly increase after these incidents, greatly affect the poor.

What's being done?

Addressing these challenges are new inclusive economic development tools like micro-insurance schemes that now provide coverage for low-income people for various risks. Increased use of technology by the urban poor (e.g., mobile phones) also helps to provide access to information and financial instruments, reducing the vulnerability of the urban poor in the event of disaster.

Disaster risk mitigation is a topic of grave relevance that is getting a considerable amount of global attention. Efforts to help increase the resilience of the poor in the face of disaster are being addressed—particularly in places that have seen major disasters already. However, many cities struggle to serve the needs of people who remain uncounted and disconnected from public affairs, such as newly arrived migrants in informal settlements.

Potential opportunity for a development stakeholder:

Develop sustainable urban migration strategies. Provide guidance on the regulatory, infrastructure, and business structures required for developing world cities to successfully accommodate the large number of urban migrants.

REGIONALIZATION OF POVERTY

The poor are stuck in mid-sized cities in suburban areas

While urban poverty in the United States has historically been associated with the inner cities of major metropolitan areas, poverty is now growing fastest in mid-sized cities and suburban areas. The poor in these areas face unique challenges, and recession-weakened communities find themselves ill-equipped to meet the needs of their most vulnerable residents.

The global recession coupled with structural changes in the economy has exacerbated inequality in America, and the geography of poverty in the country has changed. The poor are increasingly living in impoverished mid-sized cities and suburban areas. At the same time, due to the broader crisis, tax revenue for cities and municipalities are decreasing, and the services they provide for the poor are being reduced.

Residents in these areas find themselves in a spiral of poverty due to decreasing property values and the "hollowing out", or shrinking, of the middle class as more wealth is concentrated in the hands of a few. As an example, over the past five years, many poor families received mortgages they could not otherwise afford. Now, with the mortgage crisis, they find themselves with mortgages that are larger than the cost of their property (and they are unable to sell). Due to this broader crisis, tax revenue for cities and municipalities has decreased, causing authorities to reduce the services they provide for the poor, which leads to a deepening of poverty.

Outside of the top urban areas, mid-tier cities are not growing. Poverty is regionalizing, characterized by a drop in population, a decline in manufacturing sectors and loss of larger industry employers in specific regions. Compared to thriving metros, these urban and suburban communities cannot provide the social safety net mechanisms that help sustain the resilience of vulnerable families in challenging economic times.

The suburban poor also face the geographic challenges of decentralized living. In many places, car ownership is a costly, brittle lifeline in suburbs with weak public transport networks. Additionally, budget cuts often target public transportation first, hindering access to jobs, as well as services. Because of commitments to housing (mortgages or leases) or declining property values, many of the poor are unable to move from these areas.

What's being done?

Some cities are moving quickly to ramp-up public assistance programs to encourage poverty alleviation, but a true tipping point is some way off. This is a new trend and the longer-term impacts are only beginning to be understood. It is uncertain what response would be most effective, but there is a need to create greater national awareness of the problem space as a whole and to test solutions.

There has been some short term activity. Mortgage relief programs funded by the federal government to help those struggling to pay mortgages help to both increase property value and also allow the poor more flexibility to sell and move to better areas. Additionally, increased short term infrastructure spending by the federal government on items such as public transportation and roads, will improve the livelihood opportunities and inclusion of the poor.

Potential opportunity for a development stakeholder:

Encourage entrepreneurial development in mid-tier cities. Create business incubators that are linked to similar incubators in other cities, allowing local entrepreneurs to share ideas without geographic restrictions—with the goal of building and retaining local talent in mid-tier cities.

ECOSYSTEMS

A new value matrix to support nature's capacity to regenerate, sustain human wellbeing and meet growing demands

There is enormous stress being placed on the planet's natural resources by the billions of people that now inhabit it. We live resource intensive lifestyles, our urban settlements destroy natural habitats, we generate tremendous amounts of polluting waste through our activities, and agriculture and other food production practices strain the natural capacity of ecosystems to regenerate.

The resilience of Earth's natural resources are fundamental to the support of human life, yet those using these natural resources have traditionally only been held minimally responsible for their care, even though the consequences of such use may be widespread. Damage to an ecosystem is felt everywhere, placing strain on other systems. But the impact of that damage is most harshly felt by those most reliant on natural systems for their livelihood and basic needs. To preserve the fundamental resilience of the planet, an array of interventions—and new approaches—may be necessary.

Traditional preservation and conservation approaches that rely largely on the efforts of the public sector and non-governmental organizations are not alleviating the strain placed on natural systems. New approaches that drive accountability for environmental degradation will assist to "re-value" ecosystems, driving greater recognition of the intrinsic value they provide in a host of human habitats and encouraging a deeper sense of accountability by a broader range of individuals and sectors. By effectively integrating natural systems into economic and social systems, responsibility for environmental sustainability can be reframed, as can incentives, aligning all those who benefit from use of the environment around the need to sustain critical ecosystems.

Broader context

Poor and vulnerable populations that are highly reliant on natural systems for food, energy, housing and even employment are most affected by ecosystem changes. The system-wide effects of climate change have become clear: critical environmental systems are rapidly approaching tipping points with many ecosystems deteriorating more quickly than previously thought; and climate change patterns are increasingly being linked to the ever more frequent extreme weather events. Climate change further exposes poor or vulnerable populations to a changing burden of disease and different types of health risks.

Continued growth in international trade is impacting the environment with carbon dioxide emissions from the transport sector today representing close to 25 percent of total global emissions, and expected to grow by 40 percent in the three decades to 2030.[17] The looming energy crisis also threatens our natural systems. Global energy demand is expected to increase 80 percent by 2050. Fossil energy, as a share of this total energy used, is expected to remain at about 85 percent. As demand for natural commodities pushes prices higher, the most affected will be the poor who spend a larger share of their income on energy and food.

As emerging economies advance, their approach to environmental issues must be driven by economic and environmental justice considerations and they will need to be accountable. This is especially important in the light of the continued failure of international agreements and regimes—more specifically, the disappointing results of recent climate conferences and the collapse of global carbon trading systems.

A bright light framing this topic area is that the shared perspectives of different communities of practice are closing the traditional gap between conserving the environment and addressing human development.

Problem spaces

The problem spaces identified in topic area reflect the complex interaction between environmental capacity and expanding human settlements, food production and industrial growth.

- **Increasing water requirements for food production.** *Competing demands for resources jeopardize the poor and vulnerable.*
- **Unsustainable impacts of energy and waste.** *Energy and toxic waste impact the poor, from production to disposal.*
- **Collision of ecosystems.** *Forests and biodiversity are increasingly suffering permanent loss.*
- **Depleted disaster mitigation ecologies.** *Natural infrastructure unable to protect against climate shocks and vulnerability.*

"There are short-term benefits from degrading ecosystems and long-term costs, so the proverbial trade-offs are stacked against the poor."

INCREASING WATER REQUIREMENTS FOR FOOD PRODUCTION

Competing demands for resources jeopardize the poor and vulnerable

The need for food is rapidly changing our ecosystems. Feeding a growing population will stress agricultural productivity, an issue that will be compounded by climate change and diminishing freshwater.

Driven by competing demands and depletion from agriculture needs, the world's freshwater supplies are unequally shared and rapidly diminishing at an unsustainable rate. At the same time, mismanagement of coastal zones has placed strain on global fisheries, weakening the resilience of poor populations who rely on these resources for their livelihoods.

To keep pace with growing demand, agricultural production needs to double. However, agriculture has a dramatic impact on the environment, degrading land and encroaching on natural ecosystems. Production is also impacted by climate change and natural disaster, resulting in scarcity of water and pricing volatility.

Current estimates are that over one-third of the world's population lives in water scarce areas, while over 900 million individuals lack access to clean drinking water. By 2030, global demands for water are expected to exceed supply by 40 percent,[18] driven by increased population growth, and greater demands on water for food and energy production. But even where water is available, distributing it is a challenge due to lack of capacity to build and maintain the necessary infrastructure.

Multiple competing demands for the same water supply are key drivers in this problem. Food, water, and fuel are all scarce, and the use of water in one area often creates challenges in another.

Water is already intensely developed and physically scarce in a number of emerging economies, and also in parts of eastern and southern Africa. Water withdrawals are expected to increase by 50 percent in developing countries by 2025. The UN notes that Sub-Saharan Africa and Asia are the regions most likely to face severe freshwater scarcity by 2020. This is confirmed by the Water Resources Group, which found that, by 2030, one-third of the population will live in regions with a water deficit greater than 50 percent. These populations will likely to be concentrated within Sub-Saharan Africa and India.

Additionally, the need for food is impacting coastal zones, among the most productive yet highly threatened systems in the world. Small scale fisheries employ 90 percent of the world's fishers (about 50 million individuals) and impact the livelihoods of over 357 million people.[19] Coral reefs, in particular, offer a range of services to the 850 million people[20] who live close by, providing a habitat for local fish species, serving as a tourist attraction that can generate revenue for locals, acting as a buffer against damaging storms, and a harbor for species that used to create medicines. The problem is advanced with coastal "dead zones" becoming more common around the world and more than half of all coral reefs under immediate and direct threat.

The implications for poor and vulnerable populations are significant. Rising prices for water, food, and energy will be felt first by the poor, leading to highly unequal pricing models for water access. The burden is disproportionately felt by women: they are first to lose their share of scarce food and bear the burden of nursing family members who contract water borne diseases.

What's being done?

There is increased awareness among public and private sector organizations of the challenges surrounding competing demands for water. High profile alliances and working groups have been created and 80 percent of countries have intensified their efforts to improve or enable water resources management, according to a Rio+20 survey. There has also been some success with market-based approaches where downstream users of water provide compensation to those upstream to encourage conservation.

Leading private sector firms are beginning to integrate water risks into their decision making processes, and the rise of public-private partnerships addressing this problem will assist to address the challenges of providing water to both rural and urban populations, while also confirming that the resource is priced appropriately to remain sustainable.

Additionally, there is greater awareness of the impact of food insecurity and action to address it amongst leaders. The introduction of new farming methods and use of technology is improving productivity and more alliances between the private sector and other stakeholders in this arena are forming to promote sustainable farming and water use.

There are plenty of innovative solutions in this space, from high resolution mapping to advanced on-site soil testing and new ways of sharing information. The challenge here is mostly one of achieving scale and identifying the best mixture of solutions given specific geographical, economic, cultural, and technological constraints.

UNSUSTAINABLE IMPACTS OF ENERGY AND WASTE

Energy and toxic waste impact the poor, from production to disposal

The global energy and waste generation system, from harvest to consumption through disposal, has significant negative implications for the environment, with the poor most affected. The waste generated primarily impacts poor populations and the areas that they depend on for survival.

Approximately 1.3 billion people still lack access to electricity, while an additional billion only have intermittent access.[21] Despite growth in renewable technologies, fossil fuels such as oil, coal, and gas still account for 80 percent of the planet's energy supply.[22] The entire energy generation sector accounts for two-thirds of all greenhouse gas emissions.[23] In addition, new and innovative harvesting technologies (e.g., hydraulic fracking, and tar sands extraction) create environmental risks, produce more greenhouse gas emissions and consume substantially more water.[24]

Historically, energy harvest and generation of waste has been driven by the developed world. As countries like India and China follow the lead of the West, they will compound the challenge. In the United States, the focus has shifted to shale reserves, tar sands, and deep seated natural gas.

Worldwide waste production is estimated at over 11 billion tons annually.[25] The World Bank predicts that energy and waste generation will double by 2025 with growth driven by lower and lower-middle income nations.[26] Although the vast majority of waste is generated in developed countries, the damage it causes is exacerbated in the developing world. Of the approximately 200 million tons of waste generated annually in Africa, an estimated 30 to 50 percent is not properly disposed of, presenting a severe health and environmental hazard. Additionally, developing nations often dump waste adjacent to slums. These regions often have lax regulations, which enable the dumping of hazardous waste that contaminates groundwater and increases air pollution.

What's being done?

Stakeholders continue to focus on making clean energy breakthroughs affordable and mainstream. While the widespread adoption of these technological advancements are still about five to eight years into the future, there is significant attention being paid in the present to the design of effective implementation, delivery, and pricing models for poor populations.

Additionally, the growth of the waste market, led by a greater recognition of the value of waste, is addressing some waste problems. Increased understanding of the value of waste is driving efforts to capture that value, either before it is thrown away or after it reaches a trash pile. Waste-to-energy and other innovative technologies are driving much of this growth by providing a clear, tangible alternative to disposing of waste in a landfill.

Interventions in the energy and waste sector appear to be particularly opportunistic at the moment, as a mutually reinforcing set of technological, political, and economic options appear to be converging to make this a particularly dynamic area over the next one to three years.

Potential opportunity for a development stakeholder:

Securing water rights and land tenure. Using on-line tracking and new technologies to help improve the allocation of rights to those who rely on local watersheds to encourage long-term stewardship.

COLLISION OF ECOSYSTEMS

Forests and biodiversity are increasingly suffering permanent loss

The variety and quantity of biodiversity are frequently called the "wealth of the poor" because the poor are often more directly dependent on the raw materials of nature for their well-being, using natural stocks for food or as a measure of last resort. Poor populations are thus increasingly vulnerable to ongoing biodiversity loss. These impacts are felt especially in ecosystems surrounding urban areas that are particularly stressed due to rapidly rising resource consumption and population expansion.

Biodiversity and genetic diversity are key aspects of resilience for humans' adaptation strategies. It underpins the "ecosystem goods and services" that the poor rely on most. But wildlife populations have declined by a third over the past 35 years according to the World Wide Fund for Nature (WWF), and 75 percent of the genetic diversity of agricultural crops has been lost. Diminishing natural stocks and biodiversity threatens the livelihoods of the poor. The ongoing loss of biodiversity and natural stocks—both in variety and quantity—is a threat along multiple dimensions, including the loss of natural medicines, arable land, genetic diversity, and raw materials. Forests are being lost at a dramatic rate but provide key services and livelihoods for billions. At the current rate of deforestation and without the netting effects of reforestation and afforestation, all forests would be destroyed in approximately 300 years.[27] About 1.6 billion people worldwide rely on the ecosystem services forests offer, including food, shelter, clothing, medicine, and subsistence agriculture.

As these ecosystems are lost, peri-urban spaces are also being lost. These are important to the growth and operation of modern cities, acting as a buffer zone, a source of food, materials, and other resources; and providing space for waste disposal and recreation. As urbanization proceeds, new and expanding cities could displace up to 30 million hectares of the highest quality agricultural land by 2030—roughly 2 percent of land currently under cultivation—endangering biodiversity and forests further.[28]

Drivers of diminishing biodiversity and deforestation include increased consumption of natural habitats for land intensive crops that have high value (e.g., coffee, soybeans, oil palm, and biofuels), as well as the drive for accelerated food production to feed a growing population and energy access needs. Greater awareness of the need to maintain broader biodiversity of species—beyond efforts to save whales, tigers and rhinos from extinction—is also needed. Health risks also significantly increase with deforestation and biodiversity loss. These risks include water-borne diseases from a lack of sanitation, respiratory illnesses caused by air pollution, malaria and other mosquito-driven diseases.

What's being done?

Forces addressing these challenges include the rise of eco-tourism in biodiversity and forest hotspots, green land grabbing by non-governmental organizations (NGOs) for purposes of conserving biodiverse land; the development of ecological corridors free of human contact and interference to protect biodiversity; and greater protection of biodiversity in emerging markets.

Biodiversity's contribution to poverty alleviation remains under-explored, making this a problem area where there might be fewer opportunities to implement viable and innovative interventions in future. There are generally two distinct ways to address biodiversity issues—through high level international agreements and through bottom-up, community-led action. Connecting the two approaches in a productive manner remains a barrier to further progress.

International NGOs are aware of the impact of deforestation and are addressing it through global models. Reducing Emissions from Deforestation and Forest Degradation Plus (REDD+), which creates a financial value for the carbon stored in forests and incentivizes forest preservation, is making a significant impact. Finally, technology is also playing a role: in South America, Researchers has developed the first ever "near real-time" monitoring system for tracking deforestation to be piloted in South America. Stakeholders have engaged local populations and helped them meet their basic needs, which allows alternatives to deforestation to be identified and piloted.

Interest in addressing these problems is likely to increase over the next decade as cities expand horizontally and begin to take up more land, leaving many poor populations to live on the outskirts. There has been a substantial increase in attention paid to examining the spaces where ecosystems collide over the past five years. These transitional zones will become particularly dynamic as they offer opportunities for cross-disciplinary collaboration and innovation, particularly related to agriculture, deforestation prevention, biodiversity preservation and improved regulatory harmonization across ecosystems.

DEPLETED DISASTER MITIGATION ECOLOGIES

Natural infrastructure is unable to protect against climate shocks and vulnerability

Destruction of ecological infrastructure weakens the response to natural disasters, increasing the vulnerability of poor populations who rely on these natural resources for protection.

Ecological infrastructure provides intrinsic protection against natural disasters that is more effective than man-made alternatives. For example, mangrove forests, coral reefs, and wetlands protect coastlines against storms, while in mountainous areas hillside forests protect against mudslides and avalanches. Destruction of such ecological infrastructure has left the poor, many of whom live in slum and squatter settlements located in exposed areas on steep hillsides and low-lying coastal regions, increasingly vulnerable to natural disasters. With many of the key ecosystems disappearing, over 250 million people annually have been impacted by natural disasters over the last decade. That number is projected to grow to 375 million by 2015.[29]

The implications for the poor include loss of their homes, loss of life, and the negative impacts on health and education that arise in unstable and unsafe post-disaster environments, particularly for children, the elderly and the vulnerable. Specific health threats include increased prevalence of diarrhea, malnourishment, and infant mortality.

There are many drivers that contribute to the loss of ecologies. These include climate change; ignorance of the role of ecology in disaster mitigation and consequent failure to invest in its security; and extreme food pressures, which result in exploitation of ecosystems.

What's being done?

There is limited work currently being done to address this problem. Many initiatives are driven by governments and development agencies to address the after-effects of storms. That said, widespread devastation from recent events has brought the role of ecosystems in disaster-prevention to the attention of many decision-makers. Recognizing the potential for devastating impacts, some cities and regions are beginning to make investments in preventative green infrastructure. Overall though, the size and scale of investments required to address this issue have limited the involvement of other stakeholders, including the private sector.

There is significant potential to develop solutions for maintaining natural infrastructure by connecting and grouping a wide range of interventional activities related to previously disparate ecosystems. The high potential for innovation in addressing this problem space makes it particularly well-suited for intervention.

Potential opportunity for a development stakeholder:

Encourage appropriate pricing of disaster risks. Engage and incubate organizations that are working to improve pricing and valuation of disaster risks.

LIVELIHOODS

Expanding livelihood opportunities and promoting inclusive markets in the changing global economy

Livelihoods at every socio-economic level are being exposed to new pressures and threats as global trends take hold. The ways in which people support themselves are changing as more people migrate from rural to urban areas, placing strain on the infrastructure of cities. With limited opportunity for employment in the cities, work in informal sectors offering little security and potential for exploitation, and agricultural occupations holding little attraction, a new set of challenges arises.

As unemployment and underemployment expands, the potential for instability mounts, especially in developing counties where the youth bulge grows. Compounding this challenge is an ageing workforce that threatens to limit the growth of economies. Another factor is technology, which is playing an important role in increasing productivity and redistributing work, as well as opening new areas for productive work. At the same time, however, it is leaving many out of work and pushing wages down. These transitions could be explosive and recent events like the global economic crises that started in 2008 are leading many to question the continuing relevance of existing economic models. The big questions that are being asked are: can traditional approaches and economic structures—the 20th Century paradigms of growth—meet the livelihood needs of a growing population, and especially the poor and vulnerable, in the new global contexts that are emerging to characterize the century that lies ahead?

Broader context

There are a number of macro-level trends that are shaping the broader context in this topic area and will continue to shape it going forward. First and foremost is the search for a new economic model. The global economic crisis, together with the environmental sustainability debate, is spurring more mainstream global discussion of the current growth model and potential alternatives. Among the alternatives naturally arising are new hybrid business models that are blurring the boundaries between the private and public sectors as a compact seems to be emerging between sectors about wealth creation and welfare expansion.

The low growth scenario expected to play out in Europe, the US and Japan over the next decade has implications for labor markets, income levels and tax revenues, and therefore public spending. Other trends include an increased leveling of the playing field for developing and developed countries as strong growth continues in many developing countries. However, slow growth and the weakening of social protection schemes will contribute to rising inequality in developed countries, and rapid growth in developing countries will need to be coupled with inclusive policies to lift a greater majority out of poverty.

Disruptive technologies have changed how we communicate, do banking, consume or produce media—with dramatic impacts on those industries. A new wave of innovations in the fields of manufacturing, energy and transportation lies ahead, with potentially equally disruptive effects on those sectors and the people who work in them. Other trends that will impact livelihoods include: efforts to close the global governance gaps by bodies such as the United Nations to more successfully address trans-border challenges such as climate change or the global job crisis; the effects of growing global consumption on the environment; and greater diversification of sources of development capital (e.g., diaspora bonds, impact investing, social impact bonds, remittances, micro venture capital, and airline tax) and their increasing importance as official aid flows decline.

Problem spaces

Key problem spaces investigated in this topic area include:

- **Global employment crisis.** *In the future, decent jobs will be a minority experience.*
- **Informal economy.** *Volatility and low quality of informal employment.*
- **Un(der)banked.** *Financial exclusion makes building a more secure future difficult.*
- **Private sector.** *Too little responsibility for total costs of doing business.*

GLOBAL EMPLOYMENT CRISIS

In the future, decent jobs will be a minority experience

The world is facing a serious job crisis. Labor market imbalances have become more structural and therefore more difficult to eradicate, leaving many in insecure circumstances. Additionally, many of the poor—including the youth, the elderly, and those in the informal sector—face increasing underemployment. The global economy has substantially reduced its capacity to add new jobs, and future job creation will not keep pace with the flow of people into the labor pool.

Global employment has not recovered from the economic crises that started in 2007. A third of global workers, an estimated 1.1 billion, are either living in poverty, underemployed or are unemployed.[30] Add to that around 40 million additional job seekers entering the labor force each year. Driving this crisis is an inability to create jobs to meet rapid population growth, slow recovery from the global economic crises and continued economic volatility. This crisis is especially impactful for key subpopulations.

In 2010, the global youth unemployment rate was 12.6 percent, dramatically overshadowing the global adult unemployment rate of 4.8 percent.[31] Every year, 121 million adolescents will turn 16 years old and enter the labor market. Eighty-nine percent of these adolescents are located in developing countries. The implications are significant. There is the risk of creating a generation of young people who are discontent with economic and political structures, leading to social unrest, rising crime rates, increasing drug use and occurrences of depression. And for developing countries there's the risk of missing a demographic window of opportunity to profit from disproportionately large working age populations.

Additionally, the number of the elderly and older workers will continue to rise significantly in the future. Globally, the number of people older than 65 will double to 14 percent, or 1.14 billion people, by 2040.[32] By 2050 in many developed countries, older workers will make up more than 30 percent of the total working population. The elderly are likely not to have the skills to compete, will earn lower wages and will additionally have to deal with inadequate social safety nets, with out-of-pocket medical costs increasing their vulnerability. Commitments like families or a mortgage, and less geographic mobility make job loss more precarious for older workers.

Demographic pressures, the global economic crisis and continued economic volatility, and rising global un- and underemployment drive the unemployment issue. Concerns about national competitiveness are, however, prompting governments and the private sector to consider more seriously how to capitalize on a large working age populations. A positive development that could be exploited is mobile phone and Internet penetration which facilitate replication and wider distribution of educational and vocational courses.

Many countries though are finding it increasingly difficult to respond to the educational and skills needs of their workforce in a time of increasing globalization, new technology and changing patterns of work hurting the long-prospects of their economies and citizens. At the same time, many developed countries have severe shortages of skilled labor due to the migration of skilled workers, an aging workforce, or simply the lack of capacity to provide training. The skills mismatch is a source of growing inequality in earnings in many countries.

What's being done?

Dynamic forces that may act positively to help address these issues include an increased openness by governments to experiment with new labor subsidies and models. Within developing world economies, the private sector is also starting to recognize that training and sourcing local labor is more cost effective and creates long-term product demand. Additionally, there has been a massive expansion of online education capable of training large numbers of people for in-demand subjects. Development stakeholders have increased their focus and instituted a more conscious effort to align skills training directly with private sector needs in an economy. In a developing world setting, there are numerous examples of corporations that have started to invest in up-skilling non-employees to address this skill mismatch.

Development sector actors are responding in different ways, focusing on specific sub-groups, addressing the problem through acute interventions rather than tackling it from a broad policy perspective, and looking at the impact of job creation. Others are trying to ensure a living wage, working against "race for the bottom" approaches. The formalization of the informal sector to better understand global unemployment statistics is also a key area of interest.

Dynamic forces and trends which may positively impact this topic area include the rise of national creative industries in many developing countries, and the tech savvyness and global connectedness of Generation Y which could drive new forms of techno-preneurship. The private sector and governments are acting to address the challenges this topic area represents, showing an increasing interest in providing vocational training. Mobile phone and Internet penetration will also facilitate replication and wider distribution of educational and vocational courses.

Mixed-age teams are also emerging with cross-mentoring programs between old and young. In high-growth developing economies with strong industrial bases, such as India and China, companies increasingly focus on elder care issues because it is directly tied to their younger employees' well-being. In addition, some development sector organizations are focusing on efforts that better integrate the elderly into mainstream society (the "it takes a village" concept), by better understanding cultures and social fabrics.

INFORMAL ECONOMY

Volatility and low quality of informal employment

The informal economy is not a problem to overcome—it is increasingly the only livelihood option for poor or vulnerable people throughout the world. The problem lies in the insecurity and low quality of jobs in the informal system; most people engaged in informal activities face insecure incomes and a wide range of "decent work" deficits.

Two-thirds of the global labor force—over 900 million people, the majority of them women—are considered informal.[33] If agricultural workers in developing countries are included, this estimate rises to some two billion people. The informal economy is often the only source of livelihood for many disadvantaged groups. Additionally, women are often the most disadvantaged of the vulnerable populations, with the lower average earnings and greater risk of poverty.

Since the economic crisis, informal economies have expanded, augmented by the entry of the unemployed from the formal sector. This is resulting in sharp declines in the earnings of informal workers which are already well below earnings in formal sectors. In addition, informal work often takes place in hazardous environments. With limited access to social security, often unprotected by occupational health and safety measures, and limited access to health services, these workers are especially vulnerable.

Informal businesses lack access to economies of scale, have low and irregular business cash flow, poor productivity due to regulations and transport issues (among others), thin profit margins relative to time invested, and high running costs relative to turnover. Households engaged in informal activities often have difficulties in retaining working capital against urgent household demands for cash.

Excessive costs and regulations around setting up a formal business, corruption, and insecure property and land ownership rights for women are among the issues driving expansion of the informal sector.

What's being done?

There are a number of forces acting to improve working conditions in informal economies, such as a shift in mindset that sees informal economies accepted and integrated into formal economies, and efforts to improve the informal economy without formalizing it—e.g., providing capital for informal businesses.

Many governments are starting to realize the economic contributions of the informal economy. Some want to regulate it for tax revenue purposes only but others, recognize that moving informal ventures into the economic mainstream requires the creation of an environment in which the benefits of formalizing outweigh the costs of remaining informal.

Another factor contributing to improvement of working conditions in informal economies is the view held by private sector companies that inclusive sourcing of materials and labor is important to control long-term supply cost in the developing world. This could strengthen the links between the informal economy and formal global supply chains, and drive establishment of, and compliance with stricter labor standards.

UN(DER)BANKED

Financial exclusion makes building a more secure future difficult

The majority of the world's poor are unbanked. Lack of access to formal financial services limits the opportunities of the poor in terms of making livelihood investments in education and business. It also decreases their resilience in times of economic crisis.

Just over half of the world's adult population—about 2.5 billion adults—do not use formal financial services to save or borrow. Lack of access to financial services (loans, credit, savings accounts) decreases resilience to financial shocks and limits peoples' options to invest in the future. The unbanked poor rely on informal finance options that are often five to 10 times more costly and less reliable than formal ones.

The poor have no or very little money, no collateral and often live in more remote locations. This creates a "last mile" problem. This is not an attractive market for the financial industry as high transaction costs and risks outweigh potential profits. Technology, particularly mobile technology, offers a solution. There are more than twice as many people in the world with mobile phones than people with bank accounts, and mobile banking is on the rise, but its success depends on the regulatory environment and mobile phone penetration. Regulatory institutions, such as central banks, telecom regulators and governments need to adapt the old rules to suit the m-wallet business model and to enable easier collaboration between mobile and conventional banking systems.

What's being done?

There is a reform drive in a number of countries to advance financial inclusion policies to foster economic resilience. The private sector is also viewing the underbanked as a business opportunity. If financial transaction costs can be reduced, financial institutions are increasingly viewing the returns from micro-loan schemes, in aggregate and sold as securities, as a way to drive additional shareholder value.

The development sector views financial inclusion as a huge opportunity to improve the lives of the poor, if outside overhead costs can be controlled. Key trends include introduction of micro-lending, micro-insurance, micro-credit, and micro-savings opportunities. New and innovative forms of risk assessment are also emerging, expanding financial sector interest in working with traditional money lenders and developing new forms of credit checks.

PRIVATE SECTOR

Too little responsibility for total costs of doing business

The private sector is often guilty of creating wealth for a few without creating value (e.g., good jobs, skills development, and more equitably shared wealth) for workers who also suffer the negative externalities of business practices.

Of the world's 500 largest companies, according to *Fortune* magazine, all 500 would rank among the top 100 economies on the planet. While these statistics are flawed as GDP and company profits are not directly comparable, they give us an indication of the comparative size of the largest global corporations. Yet only a few of the world's 100 largest firms (e.g., Citigroup Inc. and Nestle S.A.) have developed an explicit strategy to address poverty alleviation by leveraging private markets and ensuring more inclusive supply chains.

Creating jobs is a key contribution of the private sector to poverty reduction. However, in the developed world, the "rising tide lifts all boats" metaphor is no longer as true as it once was—today high corporate profits are not necessarily synonymous with low unemployment. Meanwhile, the public is becoming aware that the institutions designed to give them a voice are unable to meet some of the most basic terms of the social contract as the issues that need to be addressed are effectively beyond their jurisdiction.

If businesses do not operate in a socially and environmentally responsible manner, the value that they create by offering goods and services, jobs and incomes, access to markets, and tax contributions are not realized to the greatest benefit of society. Part of the challenge is that investment markets place a focus on quarterly profit earnings as an indicator of success, forcing companies to focus on short-term performance. As a result, companies are less likely to invest in building their suppliers' capacity, or to invest in building strong community relations. Another challenge is that governments often do not effectively organize and regulate private sector activities so that the value and wealth is distributed equitably and that social and environmental harm resulting from these activities is minimized. Governments are also struggling to enforce compliance with national standards in a globalized economy.

But businesses also need to make a greater effort. In addition to insufficient regulative and legislative measures, there is a lack of sector-wide self-commitment among businesses. Models that measure externalities and structure incentives around them are needed.

What's being done?

Acting to address this situation is increased government intervention to enforce behavior that benefits a broader range of stakeholders. A good example is the push for clean technologies in China. Additionally, governments are playing a stronger role in private markets as a result of their interventions during the economic crisis.

Rising consumer demand for sustainable products and services are changing the dynamics of selling products and services to the marketplace. There is also the emergence of philanthro-capitalism, where the poor are viewed as customers and consumers as companies look to expand their client bases. This is blurring sector boundaries—i.e., between corporations, enterprises, and social entrepreneurship.

In general, there is an ongoing movement and conversation to demonstrate broader shared value for all parties. It is characterized by rising shareholder activism, and a move away from traditional corporate social responsibility activities.

CONCLUSION

As we look at this dynamically changing world, we recognize that in its evolution it has the potential to leave many vulnerable populations behind. Many of the poor will suffer from structural changes that will have significant impacts on their health or livelihoods, and the ecosystems or urban environments they reside in. There are many reasons for this, from increased penetration of technology, to globalization, to the youth bulge, and the increased longevity of populations. Whatever the reason, we have to recognize that these populations and communities have the potential to have their lives dramatically altered and will potentially be unable to cope with the changes.

The support systems that they have relied on in the past are unlikely to be able to continue to meet their needs.

As these systems fail, they will have a significant impact on health outcomes for poor and vulnerable populations, particularly in light of the fast approaching shift in global health burden from infectious to non-communicable diseases. Addressing NCDs will require new approaches. Universal health coverage has promise, but there remain many challenges to delivery, increasing the risk that poor populations will lack the services they require. To realize the potential of UHC, organizations need to address issues of exclusion and the shortage of health workers and services. Urban areas continue to grow and become regions of innovation and dynamism. But many are ill-equipped for the immense population increase. The poor and vulnerable may consequently congregate in overcrowded informal urban settlements that become pockets of exclusion that adversely impact health, environmental and economic well-being. Sprawling urban expansion that is characterized by a lack of infrastructure, public facilities, and basic services, leave the poor living and working in inequitable conditions. Additionally, with little protective infrastructure, large poor and vulnerable urban populations are exposed to hazards such as waste, fire and outdoor pollution, and are most heavily impacted by natural disasters.

There are enormous stresses on the planet's natural resources. Our use of these resources, which are fundamental to the support of human life, is increasing, yet those most responsible for its diminishing quantity are not those most affected by it. We continue to generate tremendous amounts of polluting waste through our activities, and agriculture and other food production practices are straining the natural capacity of ecosystems to regenerate. The collateral damage can be felt everywhere, but the most poor and vulnerable who are most reliant on the "basic needs" services ecosystems provide are worst impacted. Traditional preservation and conversation is no longer sufficient to protect these systems. Instead, interventions are required that strive for greater cross-sector collaboration.

Finally, global trends have exposed the livelihoods of the poor. In urban areas, many people are forced to work in the informal sector, with little security, health or safety protection. Unemployment and underemployment put further stresses on communities as they struggle with instability and erratic incomes. This is especially true in the many countries that must deal with a growing youth bulge and an ageing workforce. There are simultaneously many events pulling wages down, from economic crises to the growth of restrictive regulations, to permanent low-growth scenarios.

While this study focused on the current state of key global problems in the four topic areas of health, cities, ecosystems and livelihoods, it also took a forward-looking view and focused on problem areas in the developing and developed world where dynamic factors and convergence could have a positive impact over the next five to 10 years. The set of problems identified in this report was not meant to be comprehensive; it highlights the Rockefeller Foundation's understanding of the most important issues for poor populations at this time, even as it continues to analyze, research and understand dynamically interactions and evolving issues that impact these topic areas. Each topic area is large and complex, and there are potentially many more impactful problems than are highlighted in this report.

The overarching theme across all four topic areas is that the status quo is no longer an option. The ongoing trends identified in the study will present new challenges for civic society, local populations, governments, and the private sector—and each has to be a stakeholder in in finding solutions to these challenges.

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